51.001

Tetanus immunity among intravenous drug users in Uppsala County, Sweden

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Background: Lately, an upsurge in cases of Clostridium tetani infections among injecting drug users (IDUs) has occurred in the USA and the United Kingdom. The majority of tetanus cases occurred among persons inadequately vaccinated or with unkown vaccination history who sustained an acute injury. This increased susceptibility may, in part, explain the disproportionate occurrence of tetanus among IDUs. The aim of our study was to evaluate the levels of antibody to tetanus toxoid among IDUs in Uppsala County, Sweden

Methods: Blood samples obtained from 37 IDUs were determined for the level of anti-tetanus antibodies with EIA (Enzyme Immuno Assay). Titers >IgG 0.3 IU/ml were considered protective with long lasting immunity whereas IgG 0.03-0.3 IU/ml was considered low and protective. Lower or absent levels of antibody (<0.01 IU/ml) was considered non-protective antibody activity in serum.

Results: Among IDUs aged 26-45 years, 88% of the tested individuals had anti-tetanus titers >IgG 0.3 IU/ml and 12% had titers between 0.03-0.3 IU/ml. Among older IDUs (>45 years), 75% had long lasting immunity (>0.3 IU/ml) whereas 25% had titers between 0.3 — 0.03 IU/ml. None of the tested IDUs lacked protective antibodies in serum.

Conclusion: IDUs in Uppsala County are sufficiently protected against tetanus at the moment. Because all wounds, even minor and relatively clean wounds, confer a risk for tetanus, health-care providers should review the vaccination status of all IDUs and administer indicated tetanus toxoid vaccine to keep them fully protected.

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51.002

Three-year surveillance of community-acquired and health care-associated Methicillin-Resistant *staphylococcus aureus* infections in Uppsala County, Sweden

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Background: The purpose of this three-year prospective surveillance was to recognize risk factors and spread of Community-Acquired (CA) and Health Care-Associated (HCA) MRSA infections in Uppsala County and to calculate the cost by identification of patients with MRSA infections.

Methods: MRSA was isolated between 2004-2006 by systematic screening, regardless of symptoms, from all patients that had been treated in hospitals abroad or in the Stockholm area. During the study, 17 634 isolates were collected from 7967 patients attending two hospitals and 37 primary care clinics. A combination of molecular typing methods was used, including pulsed-field electrophoresis (PFGE) and mul-of Staphylococcus protein A gene (spa typing). The virulence factor the Panton Valentine Leukocidin (PVL) gene was determined. The majority of the MRSA isolates were grouped into resistance profiles of seven antibiotics.

Results: 82 cases of MRSA infections were identified, 24 HCA and 58 CA. The total cost for bacterial isolation of MRSA was 7.2 million SEK (1.14 million USD)) which amounts to 86 805 SEK (13 870 USD) per identified patient. A majority of the MRSA infections originated outside Sweden (65%). Domestic cases showed certain risk factors as alcohol or drug abuse, immunosuppression, chronic diseases and high age. Domestic MRSA infections decreased during the period whereas isolates originating from patients infected abroad increased. The isolates could be assigned into 9 clonal complexes. Most frequent clonal complexes were CC8 (34%) isolates and CC80 (23%). Two clones, CC45 (6 cases) and CC1 (2 cases) were only domestic. None of the HCA isolates carried the virulence determinant PVL gene whereas 52% of CA-cases harboured the gene. Resistance to antibiotics, other than $-lactams was rare in domestic MRSA-infections (3%) whereas 56% of patients infected abroad were resistant to several antibiotics.

Conclusion: Sweden is a low endemic country. There was no spread of MRSA in the community or in hospital during the surveillance. Patients with family relations or travel in Middle East or Asia were highly overrepresented. To save costs selected screening of patients at risk should be advised.

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51.003

One-year epidemiology of febrile diseases on the Emergency Department of a Caribbean island: the Curaçao-experience

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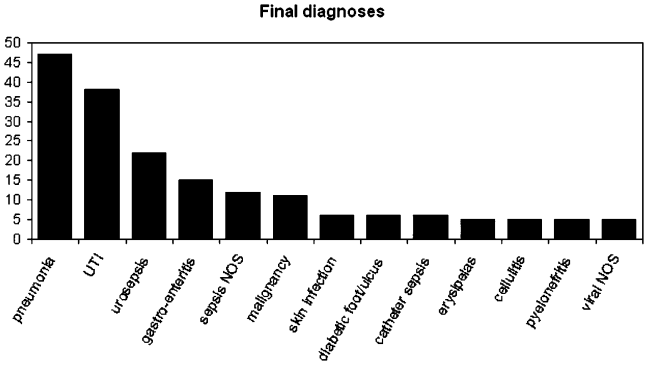
Background: Fever is one of the most frequent causes of attendance at emergency departments (EDs) worldwide. The etiology of febrile diseases in tropical countries often remains poorly characterized. Curaçao is a small tropical island in the Caribbean Sea with a semi-arid climate. The purpose of this study is to describe the etiology and outcome of febrile illnesses on the ED in Curaçao, during a one-year period.

Methods: From April 2008 to April 2009, all febrile patients ($T > 38.5\,^{\circ}C$) between 18 and 80 years who presented at the ED of the St. Elisabeth Hospital, Curaçao, Netherlands Antilles, were included. Clinical data were recorded, routine laboratory measurements and blood cultures were taken. Supplementary diagnostics were ordered at the discretion of the attending physician. Final diagnoses were made at discharge by an independent physician and again in retrospect by the main investigator, using all available clinical data.

Results: Between April 2008 and April 2009, 403 patients with fever were identified (207 males, 51.4%). Mean age was 51.4 yrs (SD 21.2 yrs). 223 Patients (55.6%) were hospitalized, 32 patients (7.9%) died and 18 patients (4.5%) were admitted to the Intensive Care Unit. In 129 febrile patients (32.0%), infection was proven. 84.4% of patients had bacterial (29.0% urinary tract infection (UTI), 23.2% pneumonia), 5.6% viral and 10.0% parasitic or fungal infection. In 34 patients (8.4%), dengue fever was suspected; dengue was serologically proven in one patient. 21 Patients (5.2%) were discharged with a non-infectious diagnosis, most frequently malignancy. 172 Patients (42.7%) were discharged without a clear diagnosis.



Final diagnoses of febrile patients on the emergency department, Curacao

Conclusion: A high mortality rate of 7.9% was observed in this cohort. We found a high prevalence of bacterial infections, with pneumonia and urinary tract infections as most common causes of fever. Not many typical tropical infections were seen, although many patients were diagnosed with probable dengue fever during the rain season, which could not be corroborated serologically. One in 20 patients presenting with fever did not have an infectious disease.

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51.004

Transmission risk and predictability of invasive meningococcal disease

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Background: In light of the media coverage concerning recent infectious disease outbreaks such as the ongoing influenza pandemic as well as previous ones involving Severe Acute Respiratory Syndrome (SARS), the public domain has become more conscience of infectious diseases as well as the effect of travel aiding their spread. Meningococcal meningitis has been a disease which among other factors such as age, climate and life style, is facilitated by travel. The causative bacterial agent, *Neisseria meningitidis*, being spread through aerosol respiratory droplets can cause Invasive Meningococcal Disease (IMD), and is a widely distributed, complex human disease affecting all age categories. Forecasting models exist for diseases based on vector-borne or wind related movement, as well as climate derived assessments, and recently travel oriented detection. Hence a combination of several factors ranging from meteorological to molecular level information should aid in determining likely occurrences of meningococcal meningitis epidemics in spatial and temporal means.

Methods: A systematic review was conducted in order to identify the different risks and models available in terms of IMD spread. Varying risk stratification was used to classify risk factors such as: travel related spread, respiratory co-infections, the effect of new meningococcal clones into a susceptible population, low humidity, high temperatures and lifestyle based aspects. These data will be used to create an early warning system generated through various technologies and transmission models in order to highlight risk areas and periods of ongoing IMD.

Results: As other studies have shown, travel patterns such as destination, duration and timing during the year affect risk of IMD development and spread among travelers, whilst climate, geography and factors such as virulence of circulating strain are more important in determining the severity of an outbreak in terms of local occurrence and potential epidemic developments.

Conclusion: Meningococcal meningitis is not only a well established threat in terms of epidemic or endemic occurrences, but also for travelers. Hence the development of more accurate and timely detection and forecasting methods are required to help in decision making processes involving prevention and early warning purposes.

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51.005

Hospitalizations due to pneumonia and case-fatality rates in Brazil between 2003 and 2007

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Background: In emerging countries, pneumonia is a leading cause of hospitalization and death, particularly among young children and older adults. Between 2000 and 2003, 13% of all deaths in children under 5 years of age living in Brazil were due to pneumonia. Overall, deaths in Brazil due to pneumonia averaged 4% between 1979 and 2001.

Methods: This was a retrospective study to quantify the rate of hospitalizations due to pneumonia (HDTP) and cases-fatality rates (CFR) in age groups ranging from <1 years old to 80 years and older. An online, interactive web-based database of individuals hospitalized during the 5-year period, 2003-2007 covered by the Integrated Health System (DATASUS) in Brazil was used to identify cases. The Instituto Brasileiro de Geografia e Estatística database served as the source of the population/denominator statistics used for